Space Day:
Prospecting for Knowledge

21-Sun/Earth/Moon Role Play-Teacher Page

Explain that the goal of this unit will be to get a clear picture of how the Earth rotates around the sun, and how the Moon travels around the Earth.
Use a group of 3, 6 or 9 students. Suns earths and Moons can take turns and alll the kids can try to figure out the movements.

Use chalk to sketch an arc representing the path of the Earth around the Sun. Have a student represent the Sun by holding a light source (lamp). Have a student represent the Earth and take a position on the path. Have the student representing the Earth move slowly along that path. Explain that the Earth takes 365 days to make a complete orbit around the Sun. Ask your students to estimate how fast the Earth would have to move to complete that orbit. Have them decide how big each of the Earth's steps should be and how many steps represent one 24-hour day.

Add the Moon by having a third student, representing the Moon, hold one end of a 5 to 7 foot string or jump rope and the student representing the Earth hold the other end. The Moon orbits the Earth by keeping the rope taunt as it moves around the Earth at the same time as the Earth moves along its orbit. Halt the demonstration and explain that the Moon takes about 27 days to go around the Earth. Ask your students to choose appropriate speed of travel for the Moon and how many steps represent on Earth day. (For instance the Earth might take heel-to-toe steps while the Moon takes longer steps. Now add that the Earth rotaes on its axis one every 24 hours and tell the Earth student to spin as required. Next add that the Moon rotates on its axis at the same rate that it revolves around the Earth. Try to get the kids to figure out that this results in the "face" of the Moon always being directed toward the Earth. The Moon does rotate and the "dark side" of the Moon is only dark to us from earth's perspective. The sun sees it regularly.

Finally, continue the demonsrtation having the "Earth" student "tilt" on his/her axis about 23 degrees. See if thestudents can guess how much tilt this should be. Note that different parts of the earth face toward the Sun at different times of the year (Arctic/Antarctic 6 month summer and winter). Now say that the Moon is only tilted .5°. Have the "Moon" hold cupped hans on his/her head to represent a deep crater. Try to demonsrtate that the "crater " will be in permanent shadow because it does not tilt toward the Sun and the crater walls (fingers) keep out the light (and heat) of the Sun.

If students suggest things that are inaccurate try them out and see how the universe changes.! Encourage kids to try out ideas (such as how would earth weather change with a different tilt, or how much would the Moon have to tilt to melt the ploar ice?).

Finally, help the students connect that this is why the ice at the lunar poles hasn't ever melted and evaporated.

Activity courtesy of University of Hawaii Institute of Geophysics and Planetology

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Volunteer to be the Sun , the Earth or the Moon!
This is your chance to be better than a mere astronaut, travelling in space-Be a planetary body!
Ask lots of questions and try to understand how the solar system really works.
Be sure to listen carefully to instructions. You can test out ideas, but be sure to get you mentor to help.